and its results, instead of on the structure of the mature cystocarp, as was Agardh's scheme. Schmitz's plan has the disadvantage that the data for its application are known in only a small proportion of the algæ; the great majority have to be assigned their place by analogy with the few of which it has been possible to study the development thoroughly; and already new observations threaten to reopen what Schmitz considered settled questions.

Agardh's system was more convenient, in that we knew the cystocarps of much the greater part of the red algæ, and might reasonably hope to find cystocarps in the few species where they were still unknown. But the chance is small of an opportunity to follow the stages from trichogyne to cystocarp in an alga from some remote part of the world, of which only a few specimens are known, and those washed up from deep water.

The present section of the work is devoted to a review of the Delesseriaceæ, of which the known species have much increased since the publication of part one of the volume in 1876. The limitations of the family are the same as before, but the subdivisions are changed, and several new genera are founded at the expense of the old genera Nitophyllum and Delesseria. The cystocarpic fruit is practically the same in all, and the characters of the tetrasporic fruit are used only for specific distinctions; all the species have the form of a flat membrane, and the distinctions are made by the greater or less number of layers of cells, the difference in size or shape of the cells of the different layers, and the presence or absence of raised mid and lateral ribs, or of veins, not elevated but formed by cells of distinctive form. Several new American species are described from Florida and from the Pacific coast.

We are sure all algologists will join in the hope that this, the latest in the author's long series of contributions, will not be the last.

F. S. COLLINS.

Greenland Algæ.[1] — It is a rather curious fact that there is hardly any part of the American coast with whose algæ we are as well acquainted as we are with those of Greenland. A number of investigators have contributed to our knowledge of this region, but much the largest share is due to the author of this work. In a former work on the same subject [2] he gave what seemed a very full account

[1] Rosenvinge, L. Kolderup. Deuxième Mémoire sur les Algues Marines de Groenland, *Meddelelser om Groenland*, XX. Copenhagen, 1898.

[2] Groenlands Havalger, *Meddelelser om Groenland*, III, 1893.

of the marine flora of the region; but the present paper, besides contributing much to our knowledge of species already found there, adds twenty-four, of which seven are new to science. This brings the total of species to 167; and if we compare this number with the corresponding figures for other regions, it must be borne in mind that the author, perhaps more than any other algologist, defines species in a very broad way, often including under one specific name several forms that are elsewhere considered distinct.

Even without this allowance, however, the number must be considered very high for an arctic flora. Two causes have contributed to increase the number — the careful study of minute epiphytic and parasitic forms, and knowledge of deep-water forms obtained by extensive dredging.

Like its predecessor, the paper is illustrated by figures in the text; the latter is in French, however, instead of Danish; a change that will be regarded as an advantage by its readers, unless they are ultra-patriotic Danes. F. S. COLLINS.

Botanical Notes. — The localization of the alkaloid in Cinchona has been investigated by Dr. Lotsy, whose studies of Taxodium are familiar to American botanists, and who is now connected with the laboratories which the Dutch government has established in its Indian colonies, for the investigation of the quinine-producing trees. His conclusions form No. 1 of the laboratory contributions of the *Gouvernement's Kinaonderneming*, printed at Batavia, a quarto of 128 pages, containing two folding plates and accompanied by an atlas of twenty colored plates of larger size.

Professor W. W. Bailey, of Brown University, communicates the following observations upon a South African species, in which proterandry was previously recorded by the same author in 1886.

"I have had a plant of *Veltheimia viridifolia* for some twenty years, and this year, after a long interval, it is blooming. The flowers, each of which has a long period of anthesis, are proterandrous, the stamens preceding the pistils several days in their development. They are slightly exserted, and the style, when finally it appears, is long exserted. The perianth is withering-persistent, and the raceme of some twenty or thirty flowers is over a month in blooming — perhaps two months in the development of its foot-long scape."

Boerlage's *Flora van Nederlendsch Indië*, with Part II of the second volume, recently issued, completes the Gamopetalæ, including the families Oleaceæ to Plantaginaceæ.